

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

Claims 1-36 (Canceled).

37. (New) A moving picture reproducing apparatus comprising:

a decoder for receiving a bitstream, obtained on compressing/encoding a moving picture,
and for restoring a picture image from said bitstream;

a characteristic parameter extraction unit for extracting a characteristic parameter from
the picture image restored; and

a picture reconstruction unit for carrying out preset processing, using a temporally past
characteristic parameter and/or a temporally future characteristic parameter, for restoring a
picture image which has not been received.

38. (New) A moving picture reproducing apparatus comprising:

a decoder for receiving a bitstream, obtained on compressing/encoding a moving picture,
decoding at least one characteristic parameter from said bitstream, outputting the characteristic
parameter decoded, and for restoring a picture image, using the characteristic parameter decoded;
and

PRELIMINARY AMENDMENT

New U.S. National Stage of PCT/JP2004/015917

a picture reconstruction unit for carrying out preset processing, using a temporally past characteristic parameter and/or a temporally future characteristic parameter, for restoring a picture image which has not been received.

39. (New) The moving picture reproducing apparatus according to claim 37, wherein said characteristic parameter extraction unit is provided in said picture reconstruction unit, said picture reconstruction unit dividing the picture image into a plurality of blocks, each being of a preset small size, extracting a characteristic parameter from the picture image restored, in at least one of said blocks, deciding on whether or not preset processing is to be carried out, with the use of a temporally past characteristic parameter and/or a temporally future characteristic parameter, and subsequently restoring a picture image which has not been received.

40. (New) The moving picture reproducing apparatus according to claim 38, wherein said picture reconstruction unit divides the picture image into a plurality of blocks, each being of a preset small size, decides on whether or not preset processing is to be carried out, in at least one small-sized block, with the use of a temporally past characteristic parameter and/or a temporally future characteristic parameter, and subsequently restores a picture image which has not been received.

41. (New) The moving picture reproducing apparatus according to claim 37, wherein said picture reconstruction unit carries out interpolation, using at least one of a temporally past

PRELIMINARY AMENDMENT

New U.S. National Stage of PCT/JP2004/015917

characteristic parameter and a temporally future characteristic parameter, along the time axis, to subsequently restore a picture image which has not been received.

42. (New) The moving picture reproducing apparatus according to claim 38, wherein said picture reconstruction unit carries out interpolation, using at least one of a temporally past characteristic parameter and a temporally future characteristic parameter, along the time axis, to subsequently restore a picture image which has not been received.

43. (New) The moving picture reproducing apparatus according to claim 37, wherein said picture reconstruction unit includes said characteristic parameter extraction unit, said picture reconstruction unit dividing the picture image into a plurality of blocks, each being of a preset small size, extracting a characteristic parameter from the picture image restored, in at least one of said blocks, deciding on whether or not interpolation along the time axis is to be carried out, with the use of at least one of a temporally past characteristic parameter and a temporally future characteristic parameter, and subsequently restoring a picture image which has not been received.

44. (New) The moving picture reproducing apparatus according to claim 38, wherein said picture reconstruction unit divides the picture image into a plurality of blocks, each being of a preset small size, decides, in at least one of said small-sized blocks, on whether or not interpolation is to be carried out, with the use of at least one of a temporally past characteristic

PRELIMINARY AMENDMENT
New U.S. National Stage of PCT/JP2004/015917

parameter and a temporally future characteristic parameter, and subsequently restores a picture image which has not been received.

45. (New) A moving picture reproducing apparatus comprising:
- a decoder, said decoder including:
 - a decoding unit for receiving a bitstream, obtained on compressing/encoding a moving picture, decoding the bitstream received, and for outputting quantized transform coefficients;
 - a inverse quantizer for carrying out calculations for inverse quantization on the quantized transform coefficients output from said decoding unit;
 - an inverse transformer for carrying out inverse transform, which is inverse to the transform carried out on an encoder side, on transform coefficients obtained on inverse quantization by said inverse quantizer;
 - an adder receiving said moving picture signal, obtained on inverse transform by said inverse transformer, at an input end thereof; and
 - a motion compensation predictor for carrying out motion compensation/prediction on the moving picture signal, output from said adder, with the use of a characteristic parameter, output from said decoding unit, and for supplying the resulting moving picture signal to another input end of said adder;
 - said decoder outputting, as a decoder output signal, a moving picture signal obtained on summing, by said adder, a moving picture signal output from said inverse transformer, and a moving picture signal output from said motion compensation predictor;

PRELIMINARY AMENDMENT

New U.S. National Stage of PCT/JP2004/015917

a frame memory for storing a moving picture signal output from said decoder;
a characteristic parameter extraction unit for extracting a characteristic parameter from the moving picture signal output from said decoder; and
a moving picture reconstruction unit for receiving said characteristic parameter, receiving a temporally past picture and/or a temporally future picture from said frame memory, and for reproducing a moving picture frame, with the use of said characteristic parameter to output the moving picture frame reproduced.

46. (New) A moving picture reproducing apparatus comprising:
a decoder, said decoder including:
a decoding unit for receiving a bitstream, obtained on compressing/encoding a moving picture, decoding the bitstream received, and for outputting quantized transform coefficients;
an inverse quantizer for carrying out calculations for inverse quantization on the quantized transform coefficients output from said decoding unit;
an inverse transformer for carrying out inverse transform, which is inverse to the transform carried out on an encoder side, on transform coefficients obtained on inverse quantization by said inverse quantizer;
an adder receiving said moving picture signal, obtained on inverse transform by said inverse transformer, at an input end thereof; and
a motion compensation predictor for carrying out motion compensation/prediction on the moving picture signal, output from said adder, using a characteristic parameter output from said

PRELIMINARY AMENDMENT

New U.S. National Stage of PCT/JP2004/015917

decoding unit, and for supplying the resulting moving picture signal to another input end of said adder;

said decoder outputting, as a decoder output signal, a moving picture signal, obtained on summing, by said adder, a moving picture signal output from said inverse transformer and a moving picture signal output from said motion compensation predictor;

a frame memory for storing a moving picture signal output from said decoder; and

a moving picture reconstruction unit for receiving said characteristic parameter, receiving a temporally past picture and/or a temporally future picture from said frame memory, and for reproducing a moving picture frame using said characteristic parameter to output the moving picture frame reproduced.

47. (New) The moving picture reproducing apparatus according to claim 45, further comprising

a division-into-small-size block unit for receiving an output from said decoder, dividing a picture image restored into preset small-sized blocks, and for outputting demarcations of said small-sized blocks; wherein

said characteristic parameter extraction unit extracts a characteristic parameter in at least one of said small-sized blocks, outputs the characteristic parameter extracted, decides, in at least one of said small-sized blocks, on whether or not the processing for restoring a moving picture is to be carried out with use of said characteristic parameter, and outputs a decision signal; and wherein

PRELIMINARY AMENDMENT

New U.S. National Stage of PCT/JP2004/015917

said moving picture reconstruction unit receives the characteristic parameter, results of decision and the information on the small-sized blocks, from said characteristic parameter extraction unit, receives a temporally past picture and/or a temporally future picture, from said frame memory, reproduces a moving picture frame, with the use of said characteristic parameter, and outputs the reproduced moving picture frame.

48. (New) The moving picture reproducing apparatus according to claim 46, further comprising

a division-into-small-size section/decision unit for receiving an output from said decoder, dividing a picture image restored into a plurality of preset small-sized blocks, outputting demarcations of said small-sized blocks, extracting a characteristic parameter in at least one of said small-sized blocks, outputting the characteristic parameter extracted, deciding, in at least one of said small-sized blocks, on whether or not processing for restoring a moving picture is to be carried out, with the use of said characteristic parameter, and for outputting a decision signal; wherein

said moving picture reconstruction unit receives the characteristic parameter, results of decision from said division-into-small-size section/decision unit and the information on the small-sized block, from said decoding unit, receives a temporally past picture and/or a temporally future picture, from said frame memory, reproduces a moving picture frame, with the use of said characteristic parameter, and outputs the reproduced moving picture frame.

PRELIMINARY AMENDMENT

New U.S. National Stage of PCT/JP2004/015917

49. (New) The moving picture reproducing apparatus according to claim 45, further comprising

an interpolator for receiving an output of said characteristic parameter extracting unit for carrying out interpolation along the time axis using at least one of a temporally past characteristic parameter and a temporally future characteristic parameter; wherein

said moving picture reconstruction unit receives a characteristic parameter from said interpolator, receives a temporally past picture and/or a temporally future picture from said frame memory, reproduces a moving picture frame, with the use of said interpolated characteristic parameter, and outputs a reproduced moving picture frame.

50. (New) The moving picture reproducing apparatus according to claim 46, further comprising

an interpolator for receiving a characteristic parameter from the decoding unit of said decoder for carrying out interpolation along the time axis using at least one of the temporally past characteristic parameter and the temporally future characteristic parameter; wherein

said moving picture reconstruction unit receives a characteristic parameter from said interpolator, receives a temporally past characteristic parameter and/or a temporally future characteristic parameter from said frame memory, reproduces a moving picture frame, with the use of said interpolated characteristic parameter, and outputs a reproduced moving picture frame.

PRELIMINARY AMENDMENT

New U.S. National Stage of PCT/JP2004/015917

51. (New) The moving picture reproducing apparatus according to claim 45, further comprising

a division-into-small-size block unit for receiving an output of said decoder, dividing a restored picture frame into a plurality of blocks, each being of preset small size, and for outputting demarcations of the small-sized blocks;

said characteristic parameter extraction unit receiving the information on the division into said small-sized blocks from said division-into-small-size block unit, extracting and outputting a characteristic parameter in at least one of said small-sized blocks, deciding on whether or not the processing for restoration of a moving picture is to be carried out, in at least one of said small-sized blocks, with the use of said characteristic parameter, and outputting a decision signal; said apparatus further comprising

an interpolator for receiving the characteristic parameter from said characteristic parameter extraction/decision unit and for carrying out interpolation along the time axis, using at least one of a temporally past characteristic parameter and a future characteristic parameter; wherein

said moving picture reconstruction unit receives the characteristic parameter, obtained on interpolation by said interpolator, result of said decision and the information on the small-sized blocks, receives a temporally past picture and/or a temporally future picture from said frame memory, reproduces a moving picture frame, with the use of said characteristic parameter and outputs the moving picture frame reproduced.

PRELIMINARY AMENDMENT

New U.S. National Stage of PCT/JP2004/015917

52. (New) The moving picture reproducing apparatus according to claim 46, further comprising:

a division-into-small-size section/decision unit for receiving an output from said decoder, dividing a restored picture image into a plurality of blocks, each being of a preset small size, outputting demarcations of said small-sized blocks, extracting and outputting a characteristic parameter in at least one of said small-sized blocks, and for deciding, in at least one of said small-sized blocks, on whether or not the processing for restoring a moving picture is to be carried out, using said characteristic parameter; and

an interpolator for receiving a characteristic parameter from said decoding unit, receiving the result of decision in said division-into-small-size section/decision unit and the information on the division into small-sized blocks, and carrying out interpolation along the time axis, using at least one of the temporally past characteristic parameter and the temporally future characteristic parameter;

said moving picture reconstruction unit receiving a characteristic parameter, obtained on interpolation by said interpolator, receiving the results of decision and the information on division into small-sized blocks, receiving a temporally past picture or a temporally future picture from said frame memory, reproducing a moving picture frame, with the use of said characteristic parameter, and outputting a reproduced moving picture frame.

53. (New) The moving picture reproducing apparatus according to claim 45, wherein said characteristic parameter is a motion vector; and wherein

PRELIMINARY AMENDMENT

New U.S. National Stage of PCT/JP2004/015917

said moving picture reconstruction unit performs, as inter-frame prediction, the motion compensation/inter-frame prediction, employing the motion vector, for reproducing a moving picture frame.

54. (New) A moving picture reproducing method comprising:

receiving a bitstream, obtained on compressing/encoding a moving picture, and decoding said bitstream to restore a picture image from said bitstream;

extracting a characteristic parameter from the picture image restored; and

carrying out preset processing, with the use of a temporally past characteristic parameter and/or a temporally future characteristic parameter, for restoring a picture image which has not been received.

55. (New) A moving picture reproducing method comprising:

receiving a bitstream, obtained on compressing/encoding a moving picture, decoding at least one characteristic parameter from said bitstream, outputting the characteristic parameter decoded, and restoring a picture image using said characteristic parameter decoded; and

carrying out preset processing, using a temporally past characteristic parameter and/or a temporally future characteristic parameter, for restoring a picture image which has not been received.

PRELIMINARY AMENDMENT
New U.S. National Stage of PCT/JP2004/015917

56. (New) A computer program for causing a computer, constituting an apparatus for receiving a bitstream, obtained on compressing/encoding a moving picture, and for reproducing the moving picture, to execute

the processing of decoding restoring a picture image from said bit stream subjected to compressing/encoding;

the processing of extracting a characteristic parameter from said compressed/encoded bitstream; and

the processing of carrying out preset processing, using a temporally past characteristic parameter and/or a temporally future characteristic parameter, for restoring a picture image which has not been received.

57. (New) A computer program for causing a computer, constituting an apparatus for receiving a bitstream, obtained on compressing/encoding a moving picture, and for reproducing the moving picture, to execute

the processing of decoding at least one characteristic parameter from said compressed/encoded bitstream, outputting the characteristic parameter decoded and restoring a picture image using the characteristic parameter decoded; and

the processing of carrying out preset processing, with the use of a temporally past characteristic parameter and/or a temporally future characteristic parameter, for restoring a picture image which has not been received.